

11/21/00
1c960 U.S. PTO

11-22-00

A

Practitioner's Docket No. 944-003.040

PATENT

Preliminary Classification:

Proposed Class:

Subclass:

NOTE: "All applicants are requested to include a preliminary classification on newly filed patent applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example 'Proposed Class 2, subclass 129.'" M.P.E.P. § 601, 7th ed.

1c841 U.S. PTO
09/11/784

11/21/00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of

Inventor(s): HELI HEISKARI

WARNING: 37 C.F.R. § 1.41(a)(1) points out:

"(a) A patent is applied for in the name or names of the actual inventor or inventors.

"(1) The inventorship of a nonprovisional application is that inventorship set forth in the oath or declaration as prescribed by § 1.63, except as provided for in § 1.53(d)(4) and § 1.63(d). If an oath or declaration as prescribed by § 1.63 is not filed during the pendency of a nonprovisional application, the inventorship is that inventorship set forth in the application papers filed pursuant to § 1.53(b), unless a petition under this paragraph accompanied by the fee set forth in § 1.17(i) is filed supplying or changing the name or names of the inventor or inventors."

For (title):

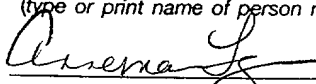
THREE-DIMENSIONAL ICONS FOR GRAPHICAL USER INTERFACE

CERTIFICATION UNDER 37 C.F.R. § 1.10* (Express Mail label number is mandatory.) (Express Mail certification is optional.)

I hereby certify that this New Application Transmittal and the documents referred to as attached therein are being deposited with the United States Postal Service on this date November 21, 2000, in an envelope as "Express Mail Post Office to Addressee," mailing Label Number EL091990347US, addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Annemarie Lazor

(type or print name of person mailing paper)



Signature of person mailing paper

WARNING: Certificate of mailing (first class) or facsimile transmission procedures of 37 C.F.R. § 1.8 cannot be used to obtain a date of mailing or transmission for this correspondence.

***WARNING:** Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. § 1.10(b).

"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

(New Application Transmittal [4-1]—page 1 of 11)

09/11/784 11/21/00

1. Type of Application

This new application is for a(n)

(check one applicable item below)

- ☒ Original (nonprovisional)
☐ Design
☐ Plant

WARNING: Do not use this transmittal for a completion in the U.S. of an International Application under 35 U.S.C. § 371(c)(4), unless the International Application is being filed as a divisional, continuation or continuation-in-part application.

WARNING: Do not use this transmittal for the filing of a provisional application.

NOTE: If one of the following 3 items apply, then complete and attach **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF A PRIOR U.S. APPLICATION CLAIMED** and a **NOTIFICATION IN PARENT APPLICATION OF THE FILING OF THIS CONTINUATION APPLICATION**.

- ☐ Divisional.
☐ Continuation.
☐ Continuation-in-part (C-I-P).

2. Benefit of Prior U.S. Application(s) (35 U.S.C. §§ 119(e), 120, or 121)

NOTE: A nonprovisional application may claim an invention disclosed in one or more prior filed copending nonprovisional applications or copending international applications designating the United States of America. In order for a nonprovisional application to claim the benefit of a prior filed copending nonprovisional application or copending international application designating the United States of America, each prior application must name as an inventor at least one inventor named in the later filed nonprovisional application and disclose the named inventor's invention claimed in at least one claim of the later filed nonprovisional application in the manner provided by the first paragraph of 35 U.S.C. § 112. Each prior application must also be:

- (i) An international application entitled to a filing date in accordance with PCT Article 11 and designating the United States of America; or
- (ii) Complete as set forth in § 1.51(b); or
- (iii) Entitled to a filing date as set forth in § 1.53(b) or § 1.53(d) and include the basic filing fee set forth in § 1.16; or
- (iv) Entitled to a filing date as set forth in § 1.53(b) and have paid therein the processing and retention fee set forth in § 1.21(l) within the time period set forth in § 1.53(f).

37 C.F.R. § 1.78(a)(1).

NOTE: If the new application being transmitted is a divisional, continuation or a continuation-in-part of a parent case, or where the parent case is an International Application which designated the U.S., or benefit of a prior provisional application is claimed, then check the following item and complete and attach **ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED**.

WARNING: If an application claims the benefit of the filing date of an earlier filed application under 35 U.S.C. §§ 120, 121 or 365(c), the 20-year term of that application will be based upon the filing date of the earliest U.S. application that the application makes reference to under 35 U.S.C. §§ 120, 121 or 365(c). (35 U.S.C. § 154(a)(2) does not take into account, for the determination of the patent term, any application on which priority is claimed under 35 U.S.C. §§ 119, 365(a) or 365(b).) For a c-i-p application, applicant should review whether any claim in the patent that will issue is supported by an earlier application and, if not, the applicant should consider canceling the reference to the earlier filed application. The term of a patent is not based on a claim-by-claim approach. See Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,205.

WARNING: When the last day of pendency of a provisional application falls on a Saturday, Sunday, or Federal holiday within the District of Columbia, any nonprovisional application claiming benefit of the provisional application **must** be filed prior to the Saturday, Sunday, or Federal holiday within the District of Columbia. See 37 C.F.R. § 1.78(a)(3).

- ☐ The new application being transmitted claims the benefit of prior U.S. application(s). Enclosed are ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

3. Papers Enclosed

- A. Required for filing date under 37 C.F.R. § 1.53(b) (Regular) or 37 C.F.R. § 1.153 (Design) Application

6 Pages of specification

2 Pages of claims

4 Sheets of drawing

WARNING: **DO NOT** submit original drawings. A high quality copy of the drawings should be supplied when filing a patent application. The drawings that are submitted to the Office must be on strong, white, smooth, and non-shiny paper and meet the standards according to § 1.84. If corrections to the drawings are necessary, they should be made to the original drawing and a high-quality copy of the corrected original drawing then submitted to the Office. Only one copy is required or desired. For comments on proposed then-new 37 C.F.R. § 1.84, see Notice of March 9, 1988 (1990 O.G. 57-62).

NOTE: "Identifying indicia, if provided, should include the application number or the title of the invention, inventor's name, docket number (if any), and the name and telephone number of a person to call if the Office is unable to match the drawings to the proper application. This information should be placed on the back of each sheet of drawing a minimum distance of 1.5 cm. (5/8 inch) down from the top of the page . . ." 37 C.F.R. § 1.84(c).

(complete the following, if applicable)

- ☐ The enclosed drawing(s) are photograph(s), and there is also attached a "PETITION TO ACCEPT PHOTOGRAPH(S) AS DRAWING(S)." 37 C.F.R. § 1.84(b).

☐ formal

☒ informal

B. Other Papers Enclosed

 Pages of declaration and power of attorney

1 Pages of abstract

1 Other (title page)

4. Additional papers enclosed

☐ Amendment to claims

☐ Cancel in this applications claims _____ before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)

☐ Add the claims shown on the attached amendment. (Claims added have been numbered consecutively following the highest numbered original claims.)

☐ Preliminary Amendment

☐ Information Disclosure Statement (37 C.F.R. § 1.98)

☐ Form PTO-1449 (PTO/SB/08A and 08B)

☐ Citations

- ☐ Declaration of Biological Deposit
- ☐ Submission of "Sequence Listing," computer readable copy and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence.
- ☐ Authorization of Attorney(s) to Accept and Follow Instructions from Representative
- ☐ Special Comments
- ☐ Other

5. Declaration or oath (including power of attorney)

NOTE: A newly executed declaration is not required in a continuation or divisional application provided that the prior nonprovisional application contained a declaration as required, the application being filed is by all or fewer than all the inventors named in the prior application, there is no new matter in the application being filed, and a copy of the executed declaration filed in the prior application (showing the signature or an indication thereon that it was signed) is submitted. The copy must be accompanied by a statement requesting deletion of the names of person(s) who are not inventors of the application being filed. If the declaration in the prior application was filed under § 1.47, then a copy of that declaration must be filed accompanied by a copy of the decision granting § 1.47 status or, if a nonsigning person under § 1.47 has subsequently joined in a prior application, then a copy of the subsequently executed declaration must be filed. See 37 C.F.R. §§ 1.63(d)(1)–(3).

NOTE: A declaration filed to complete an application must be executed, identify the specification to which it is directed, identify each inventor by full name including family name and at least one given name, without abbreviation together with any other given name or initial, and the residence, post office address and country or citizenship of each inventor, and state whether the inventor is a sole or joint inventor. 37 C.F.R. § 1.63(a)(1)–(4).

NOTE: "The inventorship of a nonprovisional application is that inventorship set forth in the oath or declaration as prescribed by § 1.62, except as provided for in § 1.53(d)(4) and § 1.63(d). If an oath or declaration as prescribed by § 1.63 is not filed during the pendency of a nonprovisional application, the inventorship is that inventorship set forth in the application papers filed pursuant to § 1.53(b), unless a petition under this paragraph accompanied by the fee set forth in § 1.17(i) is filed supplying or changing the name or names of the inventor or inventors." 37 C.F.R. § 1.41(a)(1).

- ☐ Enclosed
- Executed by

(check all applicable boxes)

- ☐ inventor(s).
- ☐ legal representative of inventor(s).
37 C.F.R. §§ 1.42 or 1.43.
- ☐ joint inventor or person showing a proprietary interest on behalf of inventor who refused to sign or cannot be reached.
- ☐ This is the petition required by 37 C.F.R. § 1.47 and the statement required by 37 C.F.R. § 1.47 is also attached. See item 13 below for fee.

- ☒ Not Enclosed.

NOTE: Where the filing is a completion in the U.S. of an International Application or where the completion of the U.S. application contains subject matter in addition to the International Application, the application may be treated as a continuation or continuation-in-part, as the case may be, utilizing ADDED PAGE FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION CLAIMED.

- ☐ Application is made by a person authorized under 37 C.F.R. § 1.41(c) on behalf of all the above named inventor(s).

(The declaration or oath, along with the surcharge required by 37 C.F.R. § 1.16(e) can be filed subsequently).

- ☐ Showing that the filing is authorized.
(not required unless called into question. 37 C.F.R. § 1.41(d))

6. Inventorship Statement

WARNING: If the named inventors are each not the inventors of all the claims an explanation, including the ownership of the various claims at the time the last claimed invention was made, should be submitted.

The inventorship for all the claims in this application are:

- ☐ The same.

or

- ☐ Not the same. An explanation, including the ownership of the various claims at the time the last claimed invention was made,
☐ is submitted.
☐ will be submitted.

7. Language

NOTE: An application including a signed oath or declaration may be filed in a language other than English. An English translation of the non-English language application and the processing fee of \$130.00 required by 37 C.F.R. § 1.17(k) is required to be filed with the application, or within such time as may be set by the Office. 37 C.F.R. § 1.52(d).

- ☒ English
☐ Non-English
☐ The attached translation includes a statement that the translation is accurate. 37 C.F.R. § 1.52(d).

8. Assignment

- ☒ An assignment of the invention to Nokia Mobile Phone Ltd.
☐ is attached. A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING NEW PATENT APPLICATION" or ☐ FORM PTO 1595 is also attached.
☒ will follow.

NOTE: "If an assignment is submitted with a new application, send two separate letters—one for the application and one for the assignment." Notice of May 4, 1990 (1114 O.G. 77-78).

WARNING: A newly executed "CERTIFICATE UNDER 37 C.F.R. § 3.73(b)" must be filed when a continuation-in-part application is filed by an assignee. Notice of April 30, 1993, 1150 O.G. 62-64.

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9. Certified Copy

Certified copy(ies) of application(s)

Country	Appln. No.	Filed
Country	Appln. No.	Filed
Country	Appln. No.	Filed

from which priority is claimed

☐ is (are) attached.☐ will follow.

NOTE: The foreign application forming the basis for the claim for priority must be referred to in the oath or declaration. 37 C.F.R. § 1.55(a) and 1.63.

NOTE: This item is for any foreign priority for which the application being filed directly relates. If any parent U.S. application or International Application from which this application claims benefit under 35 U.S.C. § 120 is itself entitled to priority from a prior foreign application, then complete item 18 on the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED.

10. Fee Calculation (37 C.F.R. § 1.16)A. ☒ Regular application

CLAIMS AS FILED				
Number filed		Number Extra	Rate	Basic Fee 37 C.F.R. § 1.16(a)
				\$690.00 \$710.00
Total Claims (37 C.F.R. § 1.16(c))	12 - 20 =	0	× \$ 18.00	--
Independent Claims (37 C.F.R. § 1.16(b))	3 - 3 =	0	× \$ 78.00	--
Multiple dependent claim(s), if any (37 C.F.R. § 1.16(d))			+ \$260.00	

☐ Amendment cancelling extra claims is enclosed.☐ Amendment deleting multiple-dependencies is enclosed.☐ Fee for extra claims is not being paid at this time.

NOTE: If the fees for extra claims are not paid on filing they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Patent and Trademark Office in any notice of fee deficiency. 37 C.F.R. § 1.16(d).

Filing Fee Calculation \$ 710.00

B. ☐ Design application
(\$310.00—37 C.F.R. § 1.16(f))

Filing Fee Calculation

\$ _____

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- C. ☐ Plant application
(\$480.00—37 C.F.R. § 1.16(g))

Filing fee calculation

\$ _____

11. Small Entity Statement(s)

- ☐ Statement(s) that this is a filing by a small entity under 37 C.F.R. § 1.9 and 1.27 is (are) attached.

WARNING: "Status as a small entity must be specifically established in each application or patent in which the status is available and desired. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established. The refiling of an application under § 1.53 as a continuation, division, or continuation-in-part (including a continued prosecution application under § 1.53(d)), or the filing of a reissue application requires a new determination as to continued entitlement to small entity status for the continuing or reissue application. A nonprovisional application claiming benefit under 35 U.S.C. § 119(e), 120, 121, or 365(c) of a prior application, or a reissue application may rely on a statement filed in the prior application or in the patent if the nonprovisional application or the reissue application includes a reference to the statement in the prior application or in the patent and status as a small entity is still proper and desired. The payment of the small entity basic statutory filing fee will be treated as such a reference for purposes of this section." 37 C.F.R. § 1.28(a)(2).

WARNING: "Small entity status must not be established when the person or persons signing the . . . statement can **unequivocally** make the required self-certification." M.P.E.P., § 509.03, 6th ed., rev. 2, July 1996 (emphasis added).

(complete the following, if applicable)

- ☐ Status as a small entity was claimed in prior application

_____ / _____, filed on _____, from which benefit is being claimed for this application under:

- 35 U.S.C. § ☐ 119(e),
☐ 120,
☐ 121,
☐ 365(c),

and which status as a small entity is still proper and desired.

- ☐ A copy of the statement in the prior application is included.

Filing Fee Calculation (50% of **A**, **B** or **C** above)

\$ _____

NOTE: Any excess of the full fee paid will be refunded if small entity status is established and a refund request are filed within 2 months of the date of timely payment of a full fee. The two-month period is not extendable under § 1.136. 37 C.F.R. § 1.28(a).

12. Request for International-Type Search (37 C.F.R. § 1.104(d))

(complete, if applicable)

- ☐ Please prepare an international-type search report for this application at the time when national examination on the merits takes place.

13. Fee Payment Being Made at This Time

☒ Not Enclosed

☐ No filing fee is to be paid at this time.
(This and the surcharge required by 37 C.F.R. § 1.16(e) can be paid subsequently.)

☐ Enclosed

☐ Filing fee \$ _____

☐ Recording assignment
(\$40.00; 37 C.F.R. § 1.21(h))
(See attached "COVER SHEET FOR
ASSIGNMENT ACCOMPANYING NEW
APPLICATION".) \$ _____

☐ Petition fee for filing by other than all the
inventors or person on behalf of the inventor
where inventor refused to sign or cannot be
reached
(\$130.00; 37 C.F.R. §§ 1.47 and 1.17(i)) \$ _____

☐ For processing an application with a
specification in
a non-English language
(\$130.00; 37 C.F.R. §§ 1.52(d) and 1.17(k)) \$ _____

☐ Processing and retention fee
(\$130.00; 37 C.F.R. §§ 1.53(d) and 1.21(l)) \$ _____

☐ Fee for international-type search report
(\$40.00; 37 C.F.R. § 1.21(e)) \$ _____

NOTE: 37 C.F.R. § 1.21(l) establishes a fee for processing and retaining any application that is abandoned for failing to complete the application pursuant to 37 C.F.R. § 1.53(f) and this, as well as the changes to 37 C.F.R. §§ 1.53 and 1.78(a)(1), indicate that in order to obtain the benefit of a prior U.S. application, either the basic filing fee must be paid, or the processing and retention fee of § 1.21(l) must be paid, within 1 year from notification under § 53(f).

Total fees enclosed \$ _____

14. Method of Payment of Fees

☐ Check in the amount of \$ _____

☐ Charge Account No. _____ in the amount of
\$ _____

A duplicate of this transmittal is attached.

NOTE: Fees should be itemized in such a manner that it is clear for which purpose the fees are paid. 37 C.F.R. § 1.22(b).

15. Authorization to Charge Additional Fees

WARNING: If no fees are to be paid on filing, the following items should not be completed.

WARNING: Accurately count claims, especially multiple dependent claims, to avoid unexpected high charges, if extra claim charges are authorized.

- ☐ The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. _____:
- ☐ 37 C.F.R. § 1.16(a), (f) or (g) (filing fees)
- ☐ 37 C.F.R. § 1.16(b), (c) and (d) (presentation of extra claims)

NOTE: Because additional fees for excess or multiple dependent claims not paid on filing or on later presentation must only be paid or these claims cancelled by amendment prior to the expiration of the time period set for response by the PTO in any notice of fee deficiency (37 C.F.R. § 1.16(d)), it might be best not to authorize the PTO to charge additional claim fees, except possibly when dealing with amendments after final action.

- ☐ 37 C.F.R. § 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)
- ☐ 37 C.F.R. § 1.17(a)(1)–(5) (extension fees pursuant to § 1.136(a)).
- ☐ 37 C.F.R. § 1.17 (application processing fees)

NOTE: “. . . A written request may be submitted in an application that is an authorization to treat any concurrent or future reply, requiring a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time. An authorization to charge all required fees, fees under § 1.17, or all required extension of time fees will be treated as a constructive petition for an extension of time in any concurrent or future reply requiring a petition for an extension of time under this paragraph for its timely submission. Submission of the fee set forth in § 1.17(a) will also be treated as a constructive petition for an extension of time in any concurrent reply requiring a petition for an extension of time under this paragraph for its timely submission.” 37 C.F.R. § 1.136(a)(3).

- ☐ 37 C.F.R. § 1.18 (issue fee at or before mailing of Notice of Allowance, pursuant to 37 C.F.R. § 1.311(b))

NOTE: Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of a Notice of Allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance. 37 C.F.R. § 1.311(b).

NOTE: 37 C.F.R. § 1.28(b) requires “Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application . . . prior to paying, or at the time of paying, . . . the issue fee. . . .” From the wording of 37 C.F.R. § 1.28(b), (a) notification of change of status must be made even if the fee is paid as “other than a small entity” and (b) no notification is required if the change is to another small entity.

16. Instructions as to Overpayment

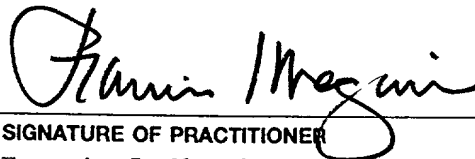
NOTE: "... Amounts of twenty-five dollars or less will not be returned unless specifically requested within a reasonable time, nor will the payer be notified of such amounts; amounts over twenty-five dollars may be returned by check or, if requested, by credit to a deposit account." 37 C.F.R. § 1.26(a).

- ☐ Credit Account No. _____
- ☐ Refund

Reg. No. 31,391

Tel. No. (203) 261-1234

Customer No. 004955



SIGNATURE OF PRACTITIONER

Francis J. Maguire

~~Ware, Fressola, Van Der Sluys & Adolphson LLP~~
(type or print name of attorney)

755 Main Street, P.O. Box 224

P.O. Address

Monroe, Connecticut 06468

☐ **Incorporation by reference of added pages**

(check the following item if the application in this transmittal claims the benefit of prior U.S. application(s) (including an international application entering the U.S. stage as a continuation, divisional or C-I-P application) and complete and attach the ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION(S) CLAIMED)

- ☐ Plus Added Pages for New Application Transmittal Where Benefit of Prior U.S. Application(s) Claimed

Number of pages added _____

- ☐ Plus Added Pages for Papers Referred to in Item 4 Above

Number of pages added _____

- ☐ Plus added pages deleting names of inventor(s) named in prior application(s) who is/are no longer inventor(s) of the subject matter claimed in this application.

Number of pages added _____

- ☐ Plus "Assignment Cover Letter Accompanying New Application"

Number of pages added _____

☒ **Statement Where No Further Pages Added**

(if no further pages form a part of this Transmittal, then end this Transmittal with this page and check the following item)

- ☒ This transmittal ends with this page.

[illegible]

of

relating to a

Express Mail No. EL091990347US

THREE-DIMENSIONAL ICONS FOR GRAPHICAL USER INTERFACE

5

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to user interface graphics for mobile phones or other
10 portable electronic devices with displays.

2. Description of the Related Art

For low-resolution displays of portable communication devices, images presented
thereon have in the past had strong two-dimensional characteristics. It would be
15 advantageous to add value to the display of images for such devices to give a more three-
dimensional effect and thereby increase the impact of the imagery presented.

BRIEF SUMMARY OF THE INVENTION

An object of the present invention is to make possible the presentation of low-
20 resolution images with strong three-dimensional effect.

According to a first aspect of the invention, a computer-readable medium encoded
with a data structure for use in providing a graphical icon for display on a display of a
portable communications device is characterized in that said data structure is encoded as
digital data indicative of said graphical icon defined by alternating light and dark stripes,
25 that selected stripes of said light and dark stripes change from light to dark and back to
light to indicate a shadow adjacent an edge of said icon and from dark to light and back to
dark to indicate a highlight adjacent another edge of said icon, and that altogether said
light and dark stripes with shadows and highlights provide said icon with a three-
dimensional appearance.

30 According to a second aspect of the invention, a communication device comprises
means responsive to an event in the communication device for providing an event signal,
a computer readable medium encoded with a data structure for use in providing a
graphical icon for display on a display of a portable communications device, wherein the
data structure is encoded as digital data indicative of said graphical icon defined by
35 alternating light and dark stripes, wherein selected stripes of said light stripes change
from light to dark and back to light to indicate a shadow adjacent an edge of said icon and

from dark to light and back to dark to indicate a highlight adjacent another edge of said icon, and that altogether said light and dark stripes with shadows and highlights provide said icon with a three-dimensional appearance, and means responsive to the event signal for retrieving the digital data from the computer-readable medium and causing said display of said graphical icon on said display according to said retrieved digital data.

According to a third aspect of the invention, a method of displaying an icon on a portable communication device comprises the steps of retrieving, in response to an event signal, digital data from a computer-readable medium, and displaying said icon in response to said digital data retrieved from said computer-readable medium, wherein said digital data is indicative of said icon defined by alternating light and dark stripes, that selected stripes of said light and dark stripes change from light to dark and back to light to indicate a shadow adjacent an edge of said icon and from dark to light and back to dark to indicate a highlight adjacent another edge of said icon, and that altogether said light and dark stripes with shadows and highlights provide said icon with a three-dimensional appearance.

Further according to the first, second and third aspects of the invention, said digital data is encoded according to a portable bitmap file format.

Still further according to the first, second and third aspects of the invention, said digital data is encoded according to a portable graymap file format.

Further still according to the first, second and third aspects of the invention, said digital data is encoded according to a portable color image file format.

These and other objects, features and advantages of the present invention will become more apparent in light of the detailed description of a best mode embodiment thereof, as illustrated in the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

Fig. 1 shows a mobile communication device, according to the present invention, with a graphical icon defined by alternating light and dark stripes.

Fig. 2A shows an “outdoor” graphical icon, according to the present invention.

Fig. 2B shows a “meeting” graphical icon, according to the present invention.

Fig. 2C shows a “silent” graphical icon, according to the present invention.

Fig. 2D shows a “footprint” graphical icon, according to the present invention.

Fig. 2E shows a “butterfly” graphical icon, according to the present invention.

Fig. 2F shows an enlarged view of Fig. 2E to better illustrate the alternating light and dark stripes, according to the present invention.

Fig. 3 shows a portable communication device, according to the present device.

Fig. 4 shows a series of steps which may be carried out in the device of Fig. 3,
5 according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Fig. 1 shows a communication device 10 in the form of a mobile station or wireless user terminal such as, but not limited to, a cellular radio telephone or personal
10 communicator that is suitable for displaying an image 12, according to the present invention. The image 12 is defined by alternating light and dark stripes, as shown. Selected stripes change from light to dark and back to light to indicate a shadow adjacent to an edge of a feature of the icon. Stripes also change from dark to light and back to
15 light and dark stripes with shadows and highlights provide the icon with a three-dimensional appearance, much like a bas-relief.

The communication device 10 of Fig. 1 includes a display 14, a keypad 16, a microphone 18 and a speaker 20. An antenna is located behind the speaker at the back of the device 10 and is not shown in Fig. 1. The keypad 16 may be covered by a sliding
20 cover 22 when the keypad is not in use.

It is noted from the icon 12 of Fig. 1 that the image there shown is of a graph, for instance of a stock price over time and has a strong three-dimensional effect on the viewer which makes the image of the graph stand out more than it otherwise would if it had been rendered as a simple two-dimensional graph, as has been the case in the prior
25 art.

Some examples of such images will now be shown. For instance, Fig. 2A shows a scene of a city which can be used as an icon to symbolize an "outdoor" context for an application of the device 10. As can be seen, it is made up of vertical stripes that alternate between light and dark. Selected stripes are interrupted and change from dark to light or
30 vice versa and may change back again, although not necessarily. These changes from light to dark in a given stripe permit the designer to create effects of highlighting and shadowing on the displayed objects in order to suggest the presence of an imaginary light source casting light from a given direction toward the objects. In Fig. 2A, the imaginary

light source is coming from the upper left and therefore the highlighting occurs on the left-hand side of the buildings illustrated, while shadowing occurs on the right-hand side.

Similarly, Fig. 2B shows a “meetings” icon which is also made up of vertical stripes alternating between light and dark. Again, an imaginary light source to the upper left creates highlighting to the left and top of the illustrated briefcase, while shadowing occurs at the bottom and right-hand side thereof. A given vertical stripe may change from dark to light or light to dark and back again, or stay the same.

Fig. 2C shows a “silent” in the form of a water lily with an imaginary light source coming from directly above. The outstretched leaves of the lily are highlighted at the top edges thereof and are shadowed underneath. Each “leaf” can be thought of as a feature of an iconic representation of a water lily, which is made of alternating light and dark vertical stripes, according to the present invention.

Fig. 2D shows a “footprint” icon with alternating light and dark vertical stripes, according to the present invention. A given light or dark stripe can change from dark to light or light to dark and remain that way or change back to the original shade. The footprint is shown illuminated from directly above by an imaginary light source, the same way as in Fig. 2C, with shadowing underneath.

Fig. 2E shows a “butterfly” icon, again illuminated from above, and made up of alternating light and dark vertical stripes, according to the present invention. Fig. 2F shows an enlargement of Fig. 2E in order to better appreciate the changing of the vertical stripes. For instance, a first dark stripe 24 at the left edge stays dark throughout the full extent thereof. The same can be said for the second stripe, which is a light-shaded stripe that does not change throughout its extent. A third stripe which is dark shaded also does not change and remains dark throughout. A fourth stripe 30 is light colored for most of its extent, but includes a short dark portion near the top and which indicates a shadow adjacent an edge of the icon of the butterfly, i.e., a shadow under the tip of its left wing. The light-shaded vertical stripe 30 starts out as light shaded and then changes to dark shaded and changes back again to light shaded. A next stripe 32 is dark shaded for most of its extent, but has a short part near the top that is used to indicate a highlight at the top tip of the left wing of the butterfly icon. This is an instance of a dark-shaded stripe changing from dark to light and back to dark again to indicate a highlight adjacent another edge of the icon of the butterfly. Altogether, these alternating light and dark stripes with parts indicating shadows and highlights provide the icon with a strong three-dimensional appearance.

All of these icons resemble sculptural reliefs in which the projection from the surrounding surface is slight and no part of the modeled form is undercut.

Fig. 3 shows the communication device of Fig. 1 as schematic block diagram. The previously-mentioned display, keypad, microphone and speaker are shown to the right of Fig. 3. They are connected to an input/output (I/O) port 34 of a signal processor 36 which is inside of the device 10. The I/O device is also connected to the previously-mentioned antenna 38 through a receiver 40 and demodulator 42, as well as a modulator 44 and transmitter 46.

The signal processor 36 includes a central processing unit (CPU) 48 connected to a data, address and control bus 50 which is also connected to a random access memory (RAM) 52 and a computer-readable medium 54, which may be a read-only memory (ROM), miniature hard drive, or other device capable of saving encoded digital data.

The digital data stored in the computer-readable medium 54 may include a computer program such as shown in Fig. 4 for displaying three-dimensional icons according to the present invention, such as those shown in Figs. 2A-2F. Such a program can take the form shown in Fig. 4, but not necessarily. It can take other forms which would be equally valid for retrieving digital data representative of three-dimensional icons, according to the present invention. In any event, after entering in a step 56, a decision is made in a step 58 as to whether or not the signal processor 36 has received or has detected an event which would call for the display of a three-dimensional icon according to the present invention. Such an event might be an internal event within the signal processor or may be an external event, such as the depression of a button on the keypad or the reception of a signal over the antenna 38, or some other event or combination thereof. If not, the step is re-executed indefinitely. Such a program can be running in background in conjunction with other processes being executed in a multi-processing environment or can be exited and returned to periodically. If such an event is detected, a step 60 is executed to retrieve digital data stored in the computer-readable medium 54 indicative of a three-dimensional icon according to the present invention. The signal processor 36 then causes the retrieved digital data to be displayed on the display 14, as indicated by a step 62, e.g., by a graphics controller. A return is then made in a step 64 for further processing.

The computer-readable medium is encoded with a data structure for use in providing the three-dimensional graphical icon of the present invention. The data structure is encoded as digital data indicative of the graphical icon defined by alternating

light and dark stripes. Selected stripes of the light and dark stripes change from light to dark. They may also change back to light again to indicate a shadow adjacent an edge of the icon. Stripes may also change from dark to light and stay that way or change back again to dark to indicate a highlight adjacent another edge of the icon. Altogether, the
5 light and dark stripes with shadows and highlights provide the icon with a strong three-dimensional appearance.

The data structure stored in the computer-readable medium may be encoded according to a portable bitmap file format known in the art as "pbm". It is a lowest common denominator monochrome file format. Alternately, the structure can be encoded
10 with other formats, such as "pgm" for portable graymap file format, or "ppm" for portable pixmap file format (lowest common denominator color image file format).

Although the invention has been shown and described with respect to a best mode embodiment thereof, it should be understood by those skilled in the art that the foregoing and various other changes, omissions and additions in the form and detail thereof may be
15 made therein without departing from the spirit and scope of the invention.

I claim:

1. A computer-readable medium encoded with a data structure for use in providing a graphical icon for display on a display of a portable communications device, characterized in that said data structure is encoded as digital data indicative of said graphical icon defined by alternating light and dark stripes, that selected stripes of said light and dark stripes change from light to dark and back to light to indicate a shadow adjacent an edge of said icon and from dark to light and back to dark to indicate a highlight adjacent another edge of said icon, and that altogether said light and dark stripes with shadows and highlights provide said icon with a three-dimensional appearance.

2. The computer-readable medium of claim 1, characterized in that said data structure is encoded according to a portable bitmap file format.

3. The computer-readable medium of claim 1, characterized in that said data structure is encoded according to a portable graymap file format.

4. The computer-readable medium of claim 1, characterized in that said data structure is encoded according to a portable color image file format.

5. A communication device, comprising:
means, responsive to an event in the communication device, for providing an event signal;

a computer-readable medium encoded with a data structure for use in providing a graphical icon for display on a display of a portable communications device, wherein said data structure is encoded as digital data indicative of said graphical icon defined by alternating light and dark stripes, that selected stripes of said light and dark stripes change from light to dark and back to light to indicate a shadow adjacent an edge of said icon and from dark to light and back to dark to indicate a highlight adjacent another edge of said icon, and that altogether said light and dark stripes with shadows and highlights provide said icon with a three-dimensional appearance; and

means, responsive to the event signal, for retrieving the digital data from the computer-readable medium and causing said display of said graphical icon on said display according to said retrieved digital data.

6. The device of claim 5, wherein said data is encoded according to a portable bitmap file format.

5 7. The computer-readable medium of claim 5, characterized in that said data structure is encoded according to a portable graymap file format.

8. The computer-readable medium of claim 5, characterized in that said data structure is encoded according to a portable color image file format.

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9. Method of displaying an icon on a portable communication device, comprising the steps of:

retrieving, in response to an event signal, digital data from a computer-readable medium, wherein said digital data is indicative of said icon defined by
15 alternating light and dark stripes, that selected stripes of said light and dark stripes change from light to dark and back to light to indicate a shadow adjacent an edge of said icon and from dark to light and back to dark to indicate a highlight adjacent another edge of said icon, and that altogether said light and dark stripes with shadows and highlights provide said icon with a three-dimensional appearance; and

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displaying said icon in response to said digital data..

10. The method of claim 9, wherein said digital data is encoded according to a portable bitmap file format.

25 11. The method of claim 9, wherein said digital data is encoded according to a portable graymap file format.

12. The method of claim 9, wherein said digital data is encoded according to a portable color image file format.

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ABSTRACT OF THE DISCLOSURE

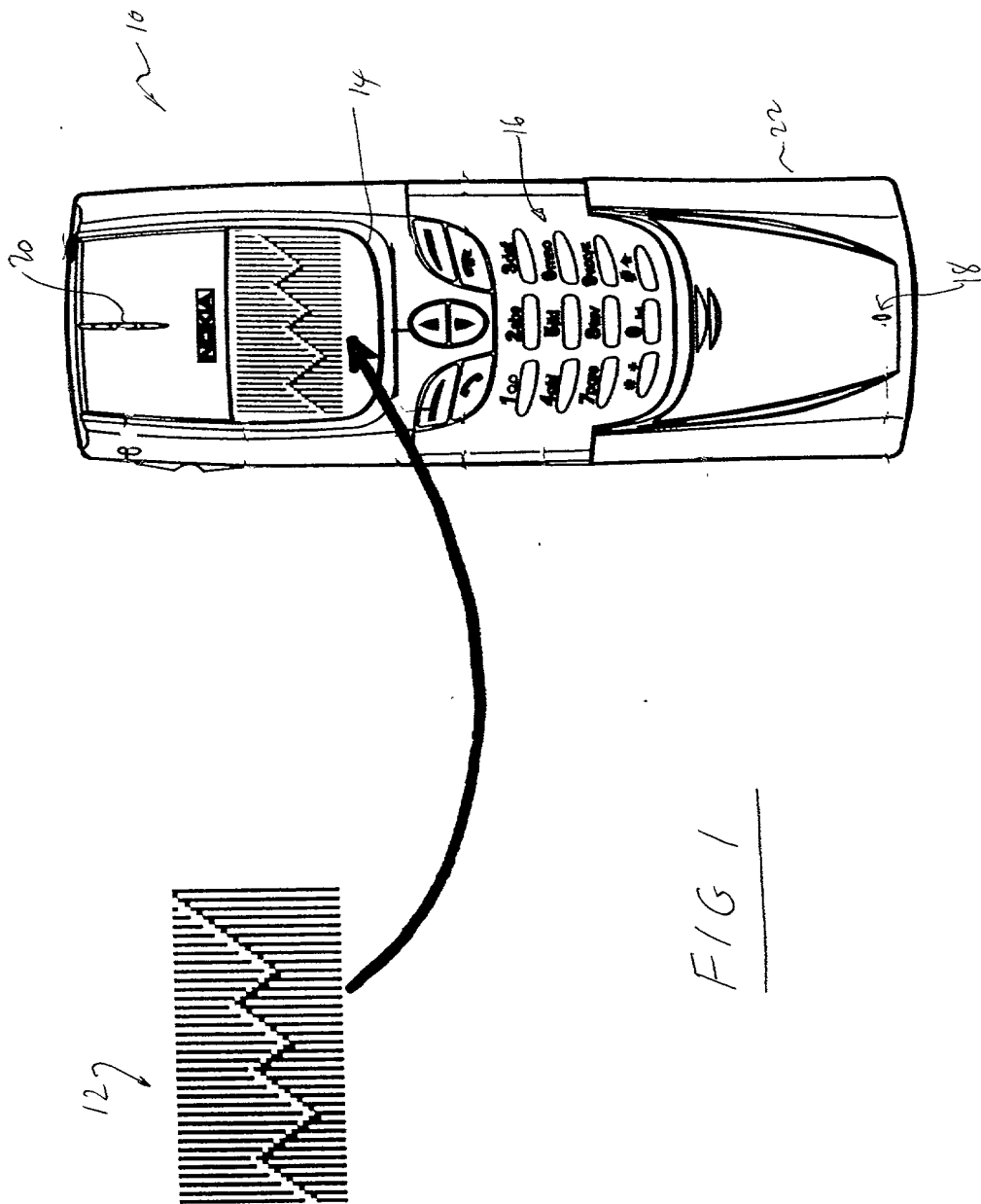
A strong three-dimensional icon is created for low-resolution displays such as used in portable communication devices by alternating light and dark stripes, with some stripes changing from light to dark and back to light to indicate a shadow, and other
5 stripes from dark to light and back to dark to indicate a highlight. Altogether, the light and dark stripes with shadows and highlights provide the icon with a strong three-dimensional appearance.

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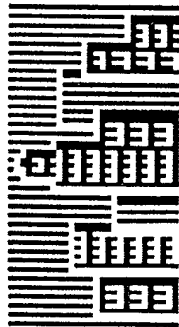


FIG 2A



FIG 2B

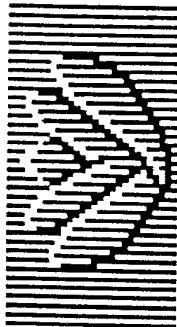


FIG 2C



FIG 2D



FIG 2E

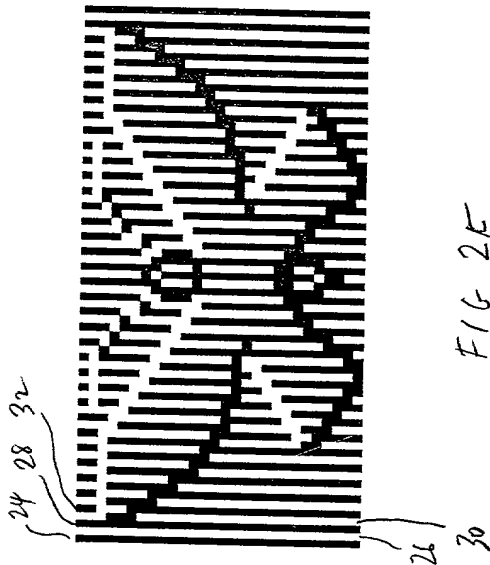


FIG 2F

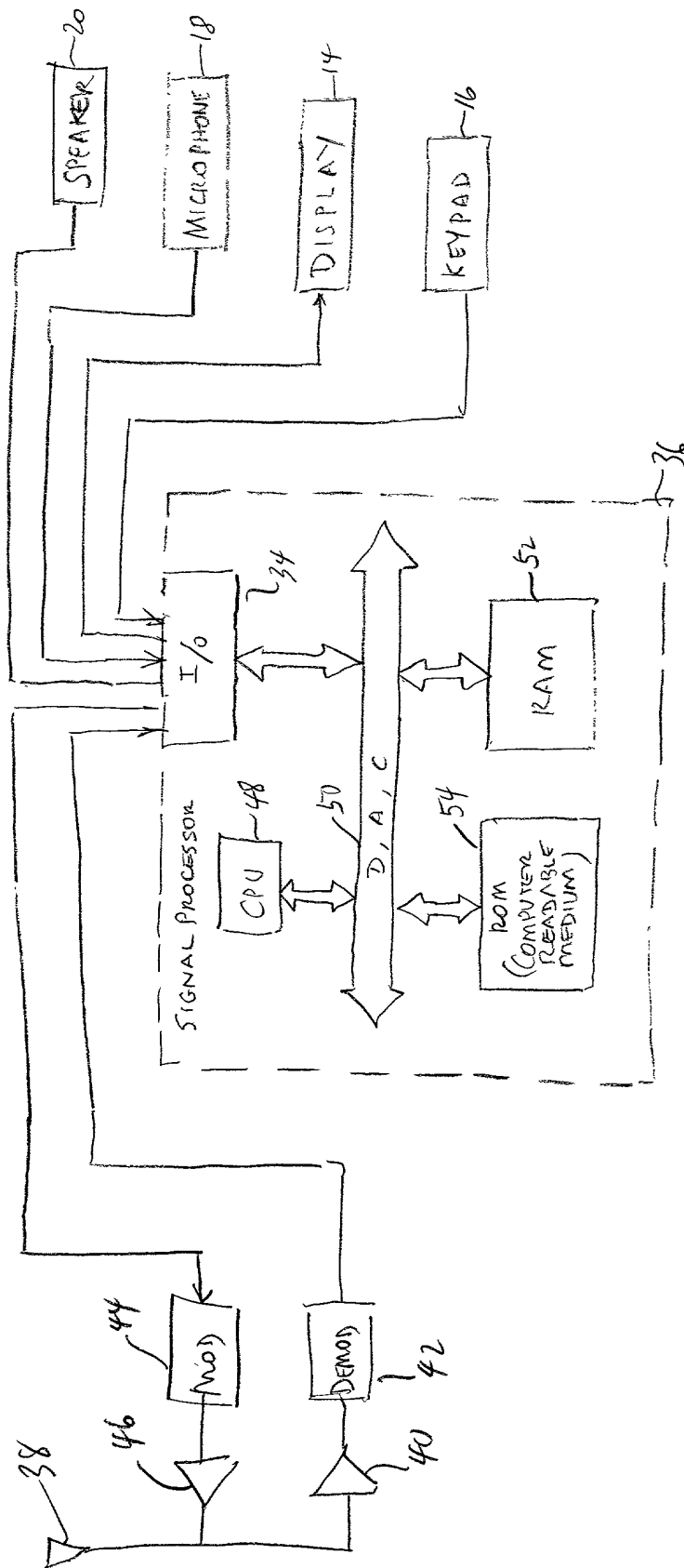


FIG 3

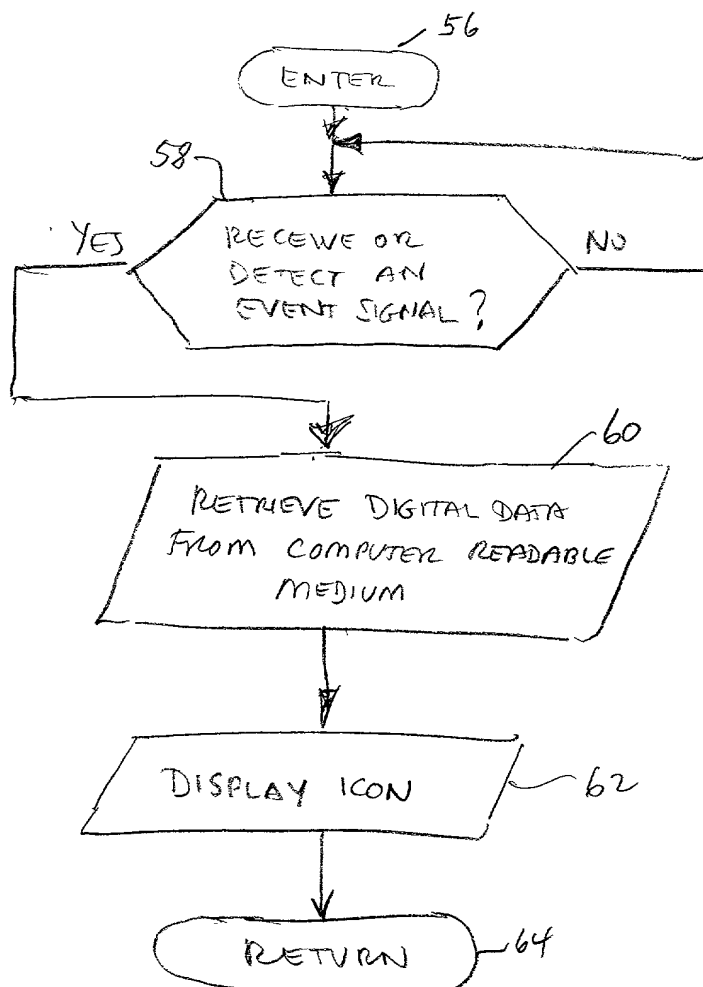


FIG 4